Histologic quality control assessment of tissue samples procured for research purposes

Procedures used by
The Cooperative Human Tissue Network
Prepared: December 2006
Updated: November 2014
The majority of CHTN tissue collection is performed in the context of excess or “leftover” tissue present in specimens resected from patients as part of their routine clinical care.

Fresh and frozen tissue samples have matched tissue samples fixed in formalin and embedded in paraffin for histologic sectioning.
Selection of tissue for histologic quality control

Cooperative Human Tissue Network
Last update: 12/14/06 W. Grizzle
Background (cont.)

- Tissue samples are provided to investigators with pertinent clinicopathologic data obtained from the surgical pathology report and other clinical records.

- The histologic slides from the FFPE tissue are examined for tissue content and agreement with associated clinicopathologic data by an Anatomic Pathologist.
Quality control data collected

- Anatomic site of procured tissue
- Tissue classification:
  - Malignant neoplasm
  - Neoplasm indeterminate for malignancy
  - Benign neoplasm or mass
  - Diseased (not neoplastic)
  - Normal
Quality control data collected (cont.)

- If malignant neoplasm:
  - Primary
  - Recurrent
  - Metastatic
  - Uncertain if primary or metastatic

- If metastatic, site of primary tumor

- Additional diagnostic classification (e.g. specific disease classification from clinical pathology report)

- If QC material is consistent with annotated clinicopathologic data
Quality control data collected (cont.)

◆ If a neoplasm (tumor) is present in the tissue section, an assessment is made of what percentage of the entire tissue area is involved by the tumor.

◆ Separate assessments are then made just on the area involved by tumor
  - Please note that a tumor has a mixture of neoplastic cells, non-neoplastic tumor stromal cells and residual normal tissue cells that have been infiltrated by the tumor.
  - The term “tumor cellularity” refers to the percentage of neoplastic cell nuclei as a total of all cell nuclei in the tumor area.
Quality control data collected (cont.)

◆ Tumor attributes that are assessed:
  • % of nuclei that are neoplastic cells (tumor cellularity)
  • % tumor necrosis, by cellularity
    – (using only tumor cells as denominator)
  • % non-neoplastic stroma, by area
    – (using only tumor area as denominator)
  • % acellular mucin, by area
    – (using only tumor area as denominator)
Examples of histologic QC

- Adenocarcinoma of the Prostate
- Adenocarcinoma of the Colon
- Lobular Breast Carcinoma
- Adenocarcinoma of the Pancreas
- Mucinous adenocarcinoma of the Colon
Prostate Cancer

1X, tumor areas circled

Assessments using all tissue in section:
% tumor by area.............30%

Non-neoplastic

Assessments using only areas involved by tumor:
% tumor nuclei (cellularity)..........85%
% tumor necrosis by cellularity.......0%
% stroma by area....................15%
% acellular mucin by area............0%

Cooperative Human Tissue Network
Last update: 11/05/2014 C. Moskaluk
Colon Cancer

1X, tumor areas circled

Assessments using all tissue in section:
% tumor by area.............60%

Non-neoplastic

Tumor

Assessments using only areas involved by tumor:
% tumor nuclei (cellularity)........70%
% tumor necrosis by cellularity....5%
% stroma by area...................25%
% acellular mucin by area..........5%

Cooperative Human Tissue Network
Last update: 11/05/14 C. Moskaluk
Lobular Breast Cancer

1X, tumor areas circled

Assessments using all tissue in section:
% tumor by area.............10%

Non-neoplastic

Assessments using only areas involved by tumor:
% tumor nuclei (cellularity)........65%
% tumor necrosis by cellularity.......0%
% stroma by area..........................90%
% acellular mucin by area..............0%

Cooperative Human Tissue Network
Last update: 11/05/14 C. Moskaluk
Pancreatic Cancer

Assessments using all tissue in section:
% tumor by area...............5%

Assessments using only areas involved by tumor:
% tumor nuclei (cellularity)........10%
% tumor necrosis by cellularity......0%
% stroma by area....................90%
% acellular mucin by area.........<5%

Cooperative Human Tissue Network
Last update: 11/05/2014 C. Moskaluk
Mucinous Colon Cancer

Assessments using all tissue in section:
% tumor by area .............. 85%

Assessments using only areas involved by tumor:
% tumor nuclei (celularity) .......... 90%
% tumor necrosis by cellularity ........ 0%
% stroma by area ..................... 10%
% acellular mucin by area .............. 80%

Cooperative Human Tissue Network
Last update: 11/05/2014 C. Moskaluk